Operating Instructions

for Touch Terminals

ISOBUS-TC

Version: V2.20140804

30302436a-02-EN

Read and follow these operating instructions.

Keep these operating instructions in a safe place for later reference.

Company details

Document

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1 Basics

1.1 Using ISOBUS-TC

The ISOBUS-TC application is an application from Mueller-Electronics which establishes an interface between the ISOBUS job computer, the TRACK-Leader application and the FMIS (Farm Management Information System) on the ISOBUS terminal.

With ISOBUS-TC, you can:

- Plan and edit ISO-XML tasks on the terminal,
- Edit ISO-XML tasks which you have planned on the PC using your FMIS.

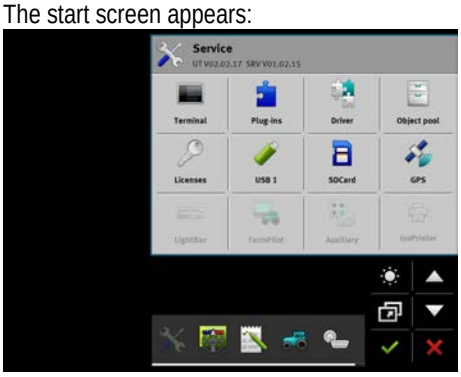
All information contained in the order will be transferred by ISOBUS-TC to specialized applications of the terminal. This means that each application is doing exactly what it can do best:

- The field boundaries, guidance lines, prescription maps and other information about processed fields stored in the task are transferred to TRACK-Leader. The field can be therefore processed.
- The target rates are transferred from a prescription map to the ISOBUS job computer. In this way, you do not have to worry about inputting the target rates.
- ISOBUS-TC documents work duration, and the persons, implements and resources involved.
- After completing the work, you can transmit all of the work results to a PC. To do so, you can either use a USB memory device [➞ 31] or the farmpilot [➞ 31] Internet portal - if it is available in your country.

1.2 Starting the ISOBUS-TC

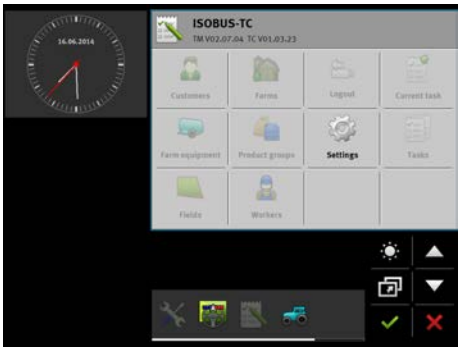
Procedure

1. Switch on the terminal.
   ⇨ The start screen appears:



2. Double-tap the icon in the selection menu:

⇨ The ISOBUS-TC application appears in the main window:



1.3 Activating the processing of ISO-XML tasks

If you want to use the ISOBUS-TC application, you must first activate the processing of ISO-XML tasks on the terminal.

There are two scenarios in which you can use ISOBUS-TC. Use the "Work with ISO-XML?" parameter to set the scenario you will work with:

- "Yes"
  Select this setting if you set up tasks on your PC or if you want to set up tasks on the terminal. In this instance, you must always start a task before you start work. Only then does the data exchange between ISOBUS-TC, TRACK-Leader and the ISOBUS-job computer function.
- "No"
  Select this setting if you do not use tasks. Instead, you use application maps in shp format or enter the application rates directly into the ISOBUS-job computer.
  In this instance, ISOBUS-TC only works in the background.

Procedure

This is how to activate the application:

1. - Open the ISOBUS-TC application.
2. Tap "Settings".
3. Tap "Work with ISO-XML?".
4. Tap "Yes".
5. - Confirm.
   ⇨ You will be asked whether you want to change the setting.
6. Tap "Yes" if you want to confirm this.
7. Wait until all messages have faded out.
8. Restart the terminal.

1.4 Data media

During operation, all tasks and data are saved on the SD card.

However, you have the option of transferring the task data between the terminal and your PC with a USB memory device or through the farmpilot portal (if it is available in your country).

Always remember:

- If you are working without farmpilot, you must always create the "taskdata" folder on the SD card. You can create the folder on the terminal or copy it together with tasks from the FMIS on the SD card.
- As soon as you insert a USB memory device with the folder "taskdata" into the terminal, the entire contents of this folder are moved to the SD card.
- To move data to a USB memory device, tap on the "Logout" button.

Terminal without PC

If you are working without a PC, and all data is only created and used on the terminal, you do not need a USB memory device during operation. You only need the USB memory device when you want to save data to a PC.

NOTICE
Data loss when deleting the USB memory device As soon as you tap on the "Logout" button, the "taskdata.xml" file on the USB memory device is moved and deleted from the SD card. The copy on the USB memory device is the only copy at this time. If you delete it, all of the data will be lost.

ISO-XML tasks from the FMIS

If you insert a USB memory device with a new task into the terminal, all of the relevant data are automatically moved to the SD card and deleted from the USB memory device. To move the data back to the USB memory device, you must logout [→ 31] the USB memory device.

farmpilot

If you are transferring the tasks online to the terminal, for example using the farmpilot portal, you do not need a USB memory device.

If you want to receive tasks through farmpilot, there must not be a taskdata folder on the USB memory device. If this folder does exist on the SD card, you have to move it to the USB memory device using the "Logout" button. When the work with farmpilot is finished, you can reinsert the USB memory device. The folder will be automatically copied to the SD card.

1.5 Controls in the ISOBUS-TC application

In this chapter, you will find an overview of the most important function icons that you may come across in the ISOBUS-TC application.

Controls

Function icon	Meaning
	Logs the USB memory device out and moves all of the task data to a USB memory device.
	Creates the "taskdata" folder on the SD card.
	Starts a task.
	Stops a task.
	Copies a task.

1.6 Screen layout in the ISOBUS-TC application

The ISOBUS-TC application includes the following screens which you must become acquainted with:

- Start screen [→ 8]
- The "Tasks" screen [→ 8]
- The "Current task" screen [→ 10]

1.6.1 Start screen

The start screen appears if you open the ISOBUS-TC application.

This consists of a row of buttons. Some of these may be grayed out.

You can tell how the application is configured by looking at the greyed out buttons.

Configuration for work with ISO-XML tasks; The Taskdata folder is on the SD card.

Configuration for work with ISO-XML tasks; The Taskdata folder is not on the SD card.

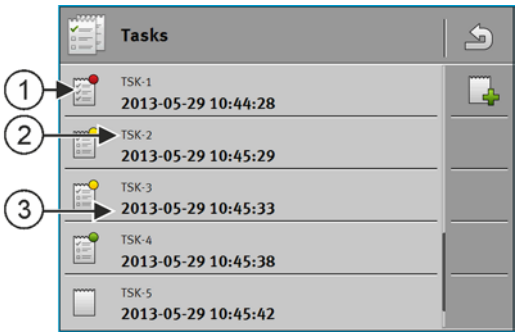
Configuration for work without ISO-XML tasks; The Taskdata folder is not on the SD card.

1.6.2 The "Tasks" screen

The "Tasks" screen contains a list of all tasks on the data medium.

To call up the screen:

1. On the start screen, tap "Tasks".



The "Tasks" screen

1	Status of tasks
2	ISO-XML number of the tasks (TSK=Task)
3	Task description

Tasks whose names are preceded by an asterisk are copies of other tasks.

You can identify the status of the task by the color of the icon preceding the name of the task.

Tasks that have not been started yet

Tasks that have not been started yet are those that have never been started.

These tasks may include:

- Newly created tasks
- Copies of existing tasks – if the name of the task is preceded by an asterisk

Paused tasks

Paused tasks are tasks which have been interrupted and not fully completed. A task will be paused automatically if another task is started while the first task is still in progress.

Started tasks

Started tasks are tasks that have been started and are currently being processed.

Stopped tasks

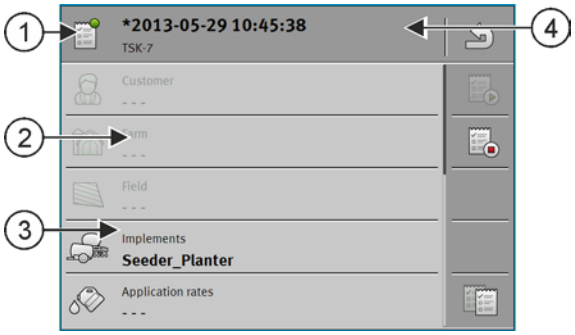
Stopped tasks are tasks that have been stopped. As a rule, these are tasks which have been completed. However, the system is not capable of verifying whether the tasks have been fully completed.

1.6.3 The "Current task" screen

The "Current task" screen contains detailed information on the started task.

To call up the screen:

- On the start screen, tap "Current task". A task must be started for this.
- On the "Tasks" screen, tap a task.



The "Current task" screen

1	Status of tasks	4	Name and number of the task
2	Grayed out parameters cannot be changed.		
3	Non-grayed out parameters can be changed.		

Controls

Function icon	Meaning
	Starts the task.
	Stops the processing of the task.
	Allows the individual task data to be edited.
	Copies the task.
	Exits the screen and asks whether the changes should be saved.

1.7 Taking care of your ISO-XML master data

We define master data as data that is on the SD card and is needed to specify tasks more precisely.

To access the master data on the SD card:

- From the FMIS - You can save the master data from the FMIS to the USB memory device. When you insert the USB memory device into the terminal, the data is automatically moved to the SD card.
- You can create the master data on the terminal and save it to the SD card. The disadvantage of this method is that the data cannot be read out with every external program. You cannot delete it either.

NOTICE

Data loss

- Create the master data only at one spot: either in the FMIS or on the terminal.
- Do not change the method.

NOTICE

Non-compatible FMIS
Not every FMIS is capable of importing modified master data.

- Before starting to change or create master data, check whether you can import your FMIS tasks with changed data.

You do not have to maintain the master data in all of the categories. The selection depends on the farm size and on the intended use.

Possible master data

Icon	Data	Contains
	Customers*	Lists with customers.
	Farms*	Lists with farms.
	Farm equipment	Lists with connected ISOBUS job computers and with other implements equipment for which the working time can be recorded.
	Product groups*	Lists with products, fertilizers, pesticides, etc.
	Fields*	Field name, areas, prescription maps**, GPS coordinates of: field boundaries, obstacles, guidance lines and more. Useful for people working with TRACK-Leader or FIELD-Nav and working on the same field over and over again.
	Worker*	Lists with workers

* - Optional master data.

** - Can only be imported through the FMIS.

The categories "Customers", "Farms" and "Fields" are linked hierarchically. This means that you must always assign a farm to a customer, a field to a farm or a customer, etc.

Procedure

To create new master data on the terminal:

1. - Open the ISOBUS-TC application.
2. Tap a button with the master data which you want to change.
   ⇨ A list of existing data of the selected type appears.
   ⇨ Function icons appear on the right-hand side, which show you what you can process.

3. Tap a function icon with the plus symbol to create a new data set.
4. Tap a function icon with a pencil symbol to process a data set.
5. - After completing the processing, exit the screen.
   ⇨ You will be asked whether you want to save the changes.

1.8 Exiting the ISOBUS-TC application

You can exit the ISOBUS-TC application at any time. This will neither finish nor cancel the tasks.

Procedure

1. Tap an additional window with another application.
   ⇨ The ISOBUS-TC appears in the additional window.
   ⇨ If an ISO-XML task is started, counters will appear there.

1.9 Configuring ISOBUS-TC

Procedure

1. - Open the ISOBUS-TC application.
2. Tap "Settings".
   ⇨ The "Settings" screen appears.
3. Double-tap the parameter which you want to configure. An explanation of the parameter is given beneath it.
   ⇨ A selection list or a keyboard appears.
4. Enter the desired value.

Parameter

On the pages below, you will find an explanation of all parameters which you require.

The "farmpilot" parameter

This parameter shows the status of the connection to the "farmpilot" portal.

The "Work with ISO-XML?" parameter

See section: Adjusting how you use ISOBUS-TC

The "List sorting" parameter

This parameter enables you to set how the master data should be sorted.

The "Function instance" parameter

Use this parameter if you want the ISOBUS-TC application to assign a specific "Function instance".

"Simplified target rate assignment" parameter

If you only create tasks in the Farm Management Information System (FMIS), you can deactivate this parameter.

If you create new tasks directly on the terminal, you have to precisely enter the quantity you want to apply (target rate) for each new task. If the implement has several hoppers, you also have to enter

the target rate for each individual hopper. This parameter serves to simplify work with such implements.

If you use the same implement on several fields in a row, activate this parameter.

When creating a task, the following values are then automatically adopted from the previous task:

- Target rate
- Product
- Implement element
- Filling/Emptying

"Save set list of connections" parameter

When this parameter is activated, the terminal saves the lists of connections [→ 25].

Every time when the job computer of an implement is connected to the ISOBUS, the terminal checks whether you have already worked with this implement in the past. If yes, the terminal will ask you whether you want to load the saved list of connections.

	Deletes all of the saved lists of connections

"Save finished tasks as a file?" parameter

With this parameter, you can set whether a text file with the work results should be created each time you stop a task. More about this in: Using text files [→ 31]

2 Quick instructions

2.1 Quick guide for FMIS users

Procedure

☑ You have a USB memory device with an ISO-XML task that you created with an FMIS. You have created the task using implement data that you previously transferred from the terminal. [➞ 16]

☑ You have set the "Work with ISO-XML?" parameter to "Yes". [➞ 6]

1. Insert a USB memory device with the task into the terminal.
2. - Open the ISOBUS-TC application.
   ⇨ The taskdata folder will be moved from the USB memory device to the SD card.
3. Tap "Tasks".
4. Tap the task which you want to process.
   ⇨ Task data appears.
5. - Start the task.
   ⇨ The task will be started.
   ⇨ The ISOBUS job computers connected to the terminal will be automatically added to the task.
   ⇨ The target rates are transmitted to the ISOBUS job computer.
   ⇨ Field boundaries, prescription maps and other field data will be transferred to TRACK-Leader.

2.2 Quick guide for users with no FMIS

If you are working without a FMIS, you have to enter the master data, such as the field name or customer name directly on the terminal.

Procedure

☑ You have set the "Work with ISO-XML?" parameter to "Yes".

1. - Open the ISOBUS-TC application.
2. Tap "Settings".
3. - Create the "Taskdata" directory.
4. - Exit the screen.
5. Tap "Tasks".
6. Tap to create a new task.
   ⇨ A form for inputting the task data appears.
7. Complete the form. You can also leave the form empty and work with a blank task. This is sensible when you do not need to document the work, but have to start a task to be able to start a navigation in TRACK-Leader.

8. - Save the task.
   ⇨ The following message appears: "Do you want to save your changes?"
9. To confirm, tap "Yes".
10. - Start the task.
    ⇨ The task will be started.
    ⇨ The ISOBUS job computers connected to the terminal will be automatically added to the task.
    ⇨ The target rates are transmitted to the ISOBUS job computer.
    ⇨ Field boundaries, prescription maps and other field data will be transferred to TRACK-Leader.
11. Process the field. You can open another application. ISOBUS-TC continues to transmit all information in the background.
12. After working, open the ISOBUS-TC application again.
    ⇨ A screen with the active task appears. If not, tap "Current task" on the start screen.
13. - Terminate the task.

3 Step 1: Preparing the data medium

Before starting to work, you have to prepare the data medium that you will be using on your terminal.

The procedure differs depending on how you work. Continue reading in one of the following chapters:

- Preparing a data medium for working without an FMIS
- Preparing a data medium for working with an FMIS
- Preparing a data medium for farmpilot

3.1 Preparing a data medium for working without an FMIS

If you are working without FMIS, you must first create the "Taskdata" folder on the storage medium. [➙ 18] Then you can create a new task. [➙ 19]

3.2 Preparing a data medium for working with an FMIS

If you are working with an FMIS, you first have to perform the following steps:

1. Create a "taskdata" folder on the SD card. [➙ 18]
2. Create and start a blank task. In this way, all of the relevant information from the ISOBUS job computer is saved to transmit it to the FMIS. [➙ 16]
3. Create a task in the FMIS.
4. Save the task from the FMIS to the USB memory device.
5. Insert the USB memory device into the terminal.

3.2.1 Exporting implement settings for the FMIS

Before you can plan with tasks with the FMIS for ISOBUS implements, the FMIS has to know the current implement description. This includes, for example: Geometry of the implement, ID number, working width, holding capacity.

To deliver this data to the FMIS, you need to create a blank task on the terminal. ISOBUS-TC writes the complete implement description in the taskdata.xml with the task. Then you have to open this task in the FMIS.

When to perform?

You must perform this step in the following instances:

- Before you plan the first task.
- If you change implement parameters in the job computer. This can include: Work width, geometry or number of nozzles. When the application identifies that the implement description in the task differs from that in the job computer, it will not allow the task to start.

Mode of operation

In this step, all parameters stored in the job computer of the implement are saved in an XML file. These data is provided with a unique ID number.

You have to repeat this step once more for each ISOBUS-capable implement.

NOTICE

If you are planing a task for an implement, you must ensure that the properties of the implement in the FMIS match with the configuration of the implement in the ISOBUS job computer. If parameters such as the working width, geometry or number of hoppers do not match, the work data will be assigned to a new implement created by the ISOBUS-TC. You can still continue to work, but you will have to correct the counters later in the FMIS.

- If you use an implement with different working widths or geometries, you create an individual implement profile in the FMIS for each configuration.

Procedure

☑ You have connected the terminal to the ISOBUS job computer that you wish to add to the master data.

☑ You have configured the ISOBUS job computer.

1. Insert an empty USB memory device into the terminal.
2. Create the "taskdata" folder.
3. Create a new task. You do not need to enter any task data for this task. [➞ 14]
4. Start the task.
5. Tap one of the additional windows.
   ⇨ The ISOBUS-TC application appears in the additional window.
6. Wait until counters also appear in the window.
7. Tap the counters.
   ⇨ The ISOBUS-TC application appears in the main window.
8. - Terminate the task.
9. - Exit the screen.
10. - Exit the screen.
11. - Log out the USB memory device.
12. You have transferred the implement parameters to the USB memory device. The data is in the taskdata.xml file.
13. Read the task or the taskdata.xml file with your FMIS.

3.3 Preparing a data medium for farmpilot

You will receive data from the portal if they are sent by a dispatcher. The dispatcher will always send the data as sets of tasks that consist of one or more tasks.

Procedure

You will receive the set of tasks from the dispatcher as follows:

☑ The terminal is connected to farmpilot.

☑ An SD card is inserted in the terminal.

1. **NOTE!** The SD card must not contain a folder named "TASKDATA". If this folder does exist, you must transfer the existing data to a USB memory device. To do so, tap "Logout".

2. - Open the ISOBUS-TC application using the selection menu.
   ⇨ As soon as you receive a task, the following message appears on the start screen: "New task data available".
3. Tap "OK".
   ⇨ The start screen appears.
4. Tap "Download".
   ⇨ The tasks will be downloaded.

3.4 Creating the "taskdata" folder

The Taskdata folder serves as the storage location for all ISOBUS-TC-relevant files:

- File with all tasks and master data: taskdata.xml
- Prescription maps: bin files

If you insert an empty USB memory device into the terminal, you can create the folder directly on the terminal.

Procedure

1. - Open the ISOBUS-TC application using the selection menu.
2. Tap "Settings".
3. - Create the "Taskdata" directory. If this function icon does not appear, the directory is already present on the SD card.
   ⇨ The following message appears: "The folder has been created"
4. Confirm.

⇨ The following function icon appears on the start screen: .

4 Step 2: Creating a task

When you have prepared the storage medium, you must now create a new task.

If you are using farmpilot, you cannot create tasks on the terminal. Instead you must wait until you receive a task from the dispatcher.

Procedure

To create a new task:

1. - Open the ISOBUS-TC application using the selection menu.
2. Tap "Tasks".
   ⇨ The "Tasks" screen appears.
3. You now have two options:
4. Option a: Create a new task.
   ⇨ Several parameters from the task appear on the screen.
   ⇨ The new task was named by the terminal with the current date and time.
5. Option b: - Copy the task. In the copied task, you can adopt or change all of the task data from the original task and then process it as a new task.
   ⇨ The new task will be added to the list and marked as a copy with an asterisk.

⇨ You have created a new task.

You now have the following options:

- You can fill the task with task data. [→ 20]
- You can start the task. [→ 23]
- You can save the task. [→ 22]

5 Step 3: Entering and saving task data

Task data are precise characteristics of a task that can be summarized in a form. In this way, you can describe each task more precisely and therefore document the work you perform, for whom, and how the connected ISOBUS job computer should react.

On the one hand, the task data serves to improve your own documentation. On the other, it serves to give work specifications to the connected ISOBUS job computers and applications.

There are two types of task data:

- Static task data – this task data is entered once in the FMIS or on the storage medium of the terminal and is no longer changed. This is data such as customer names, addresses, fields. It is assigned once to a task and can no longer be changed after the task has been started.
- Dynamic task data – this task data can be changed during work. Some of it is automatically determined (connected implements, counters, list of connections) or entered by the operator (task phase, worker)

The following table shows the times at which you can change different task data.

Time at which a change is possible

Parameter	Task is new and was not saved yet	Task has already been saved	Task is started.
Designator	+	-	-
Customer	+	-	-
Farm	+	-	-
Field	+	-	-
Farm equipment	+	+	+
Target rates	+	+	+
Person in charge	+	-	-
Worker	+	+	+
Work process	+	-	-
Filling/Emptying	-	-	+
Counter	-	-	+
List of connections	-	+	+
Sensors	-	+	+

The following sections tell you how to change task data in tasks that have not been started yet.

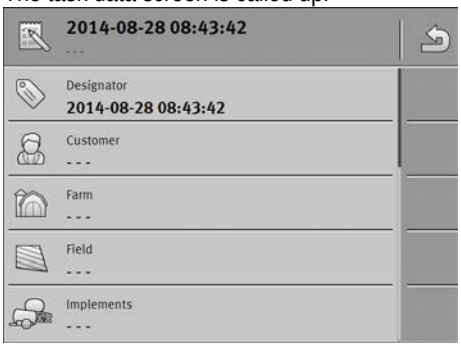
As soon as you start a task, read this section: Step 5: Using the ISOBUS-TC application during work [➞ 24]

5.1 Entering task data in a new task

Procedure

☑ You have created a new task, but have not yet saved it.

☑ The task data screen is called up:



1. Tap "Designator".
   ⇨ The keyboard appears.
   ⇨ If you cannot see the "Designator" field, it is because the task has already been saved in the past.
2. Give the task a name.
3. Confirm.
4. If you want to document what you do on which field and for whom, tap one of the following categories: Customer, Farm, Field. However, this is not mandatory.
   ⇨ A list with the customers, farms and fields saved in the master data appears.
   ⇨ If the list is empty, it means that the master data is empty. In this case, read this section: Taking care of your ISO-XML master data [➞ 10]
5. Select the information from the list that match your task.
6. In this step, ignore the "Implements", "Target rates" and "Work process" categories. When starting the task, the terminal automatically recognizes which implements are connected. Then you can also enter the target rates.
7. - Exit the form.
   ⇨ The following message appears: "Do you want to save your changes?"
8. Confirm.

⇨ You have entered the task data and saved the task.

5.2 Terminaling the Task Data

It does not matter whether you have created the task on the terminal or in the FMIS. You can always view the details.

Procedure

To display more information on the task data:

☑ The task data screen has been called up.

☑ The task has already been saved.

1. Tap briefly on the line with the task data: Customer, Farm, Field, Worker. The line must contain data for this.

⇨ A form appears with more detailed information.

5.3 Changing static task data

In this section, you will learn how to change the static task data for a task that has been saved but not yet started. For example, for the copy of a task.

Procedure

☑ The "Tasks" screen is called up.

1. Tap an existing task.
   ⇨ The screen with the task data appears.
   ⇨ Option a: If the task has never been started before, this function icon appears on the side.
   ⇨ Option b: If the task has already been started, this icon does not appear.
2. Tap the icon to edit the task data.
3. For tasks that have already been started, tap the dynamic task data that are written in bold to edit them.

5.4 Save task data

Procedure

☑ You have created a new task and entered the task data.

1. - Exit the screen.
   ⇨ The following message appears: "Do you want to save your changes?"
2. Confirm.

6 Step 4: Starting a task

You can start every task regardless of its status.

Procedure

1. - Open the ISOBUS-TC application.
2. Tap "Tasks".
3. Tap the task that you want to start.
4. - Start the task.
   ⇨ The icon for the task changes its colour.

⇨ You have started the task.

You now have the following options:

- You can select the farm equipment that is involved. [→ 25]
- You can select workers. [→ 27]
- You can stop working and pause the task. [→ 30]

7 Step 5: Using the ISOBUS-TC application during work

7.1 Entering target rates

If you want to define a target rate for the ISOBUS job computer, you can do so through a task. The target rate tells the ISOBUS job computer how much product should be applied by the metering units of the implement.

To doing so, you have the following options:

- You can enter a target rate in the "Target rates" field of the task. This value is transmitted to the ISOBUS job computer, so that the job computer works according to this definition until the task is completed.
- For implements with more than one metering unit, you can enter a target rate for each metering unit.
- You can add a prescription map to the task in the FMIS and then start the task on the terminal. In this case, pay attention to the following:
  - The terminal sends only those target rates to the job computer that are required at the current GPS position.
  - If you are working with prescription maps, only the average target rate appears under the "Target rates" parameter. You cannot change the individual target rates of the prescription map.
  - If supported by the ISOBUS job computer, you can use up to four prescription maps. Every prescription map then contains target rates for one metering unit of the implement.

Procedure

☑ The task is started.

1. Tap "Target rates".
2. Tap:
   ⇨ The "Target rate" screen appears.
3. Enter the target rate in the "Quantity" field.
4. In the "Unit" field, select the unit in which you have entered the quantity. It must be a unit that is compatible with the metering unit of the job computer.
5. In the "Implement element" field, select the metering unit or hopper to which the target rate should be assigned. This entry is optional and is only possible if the ISOBUS job computer offers this possibility. If an implement has several metering units, you can enter a target rate for each metering unit. If you do not select a metering unit, the target rate will be assigned to all of the metering units.
6. In the "Product" field, select what you want to apply. This entry is optional and is only possible if you have previously created the list of products in the master data or have adopted them from the prescription map.
7. If you want to specify the components contained in the "product" more precisely, tap .
8. - Save the data.
   ⇨ The "Target rates" screen appears.
9. If your implement has several metering units, you can now add more target rates.

7.2 Adding farm equipment

If you wish, you can add all of the farm equipment that you will be using to the task. In this way, you can precisely calculate the time in which you used each farm equipment and for which work.

The following equipment are always automatically added:

- Tractor-ECU - It is the "Tractor-ECU" application installed on the terminal. You need the Tractor-ECU to be able to transmit the geometry of the tractor to TRACK-Leader.
- Connected ISOBUS job computer - The terminal automatically recognizes which job computer is connected.

Procedure

This is how to add farm equipment:

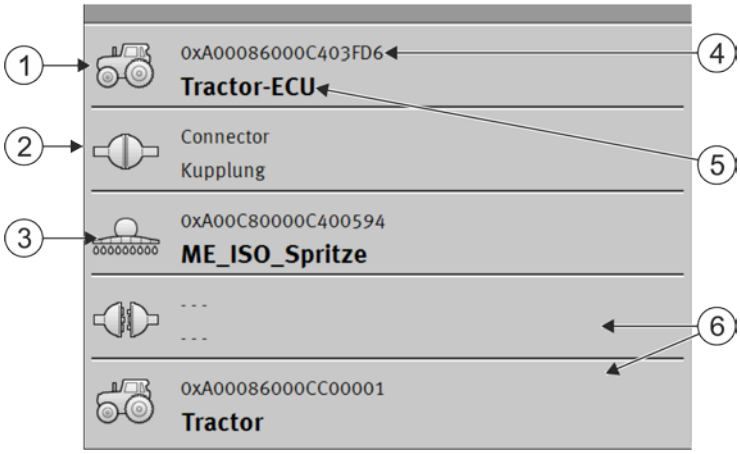
☑ In the master data, there are datasets with implements, or ISOBUS job computers are connected.

☑ A task is started.

1. Open the current task.
2. Tap "Farm equipment".
3. - Add an equipment from the list.

7.3 Configuring the list of connections

The list of connections indicates the ISOBUS job computers from which the terminal will load the geometries of the connected implements. This geometry is required in order to calculate the position of all implement components on the basis of the GPS signal. Only in this way are precise parallel driving and section switching possible.



The farm equipment must be ordered consecutively from the front to the rear when viewed in the direction of travel

(1)	Tractor job computer icon In this case, it is the Tractor-ECU application of the terminal.	(4)	ISO number for the ISOBUS job computer
(2)	There is a connection between "Tractor-ECU" and "ME_ISO_Spritze". - connected implements.	(5)	Name of the job computer
(3)	Icon for the "ME_ISO_Spritze" ISOBUS job computer	(6)	Not all of the equipment in the list must be connected. Job computers which contain no relevant geometric data can be disconnected. In the image, the "Tractor" job computer has been disconnected, as the tractor geometry should be transferred from the Tractor-ECU application of the terminal. - disconnected implements.

Procedure

If you are using the ISOBUS-TC application, you can configure the list of connections as follows:

☑ All ISOBUS job computers required for a task are connected.

☑ The task is started.

1. - Open the ISOBUS-TC application.
2. Tap "Current task".
   ⇨ The "Task" screen appears.
3. Tap "List of connections".
   ⇨ You have called up the list of connections screen.
   ⇨ A list appears with all of job computers, controllers and ECUs connected to the ISOBUS. The connectors appear between these devices.
4. Tap the task in the top row in order to select the first implement. If you are using a ME terminal to which a GPS receiver is connected, set the "Tractor-ECU" application in the top line. If another terminal or tractor job computer contains the geometry, it can be used for the list of connections.
5. The device that is connected to the ME terminal should appear in the second line. Tap the line with the second implement and select one from this.
6. You now only need to select the appropriate connector between the two devices. Tap the line between two devices and select the appropriate connector for each device.
7. - Exit the screen to save the settings.

In simple systems, the terminal can set up the list of connections automatically. In particular, when the ME terminal is the only unit which contains the tractor geometry (see: Configuring the parameters for a vehicle profile)

It can however still be necessary to set the list of connection manually in the following instances:

- If a tractor job computer (Tractor-ECU), in which the tractor geometry is saved, is mounted as an independent job computer on the tractor. In this instance, you must decide which Tractor-ECU is connected in the list of connections with other equipment: the application on the ME terminal or on the tractor job computer.
- If the system cannot organize the ISOBUS job computer by itself. For example when more than one implement is connected to the tractor (e.g.: slurry tanker and planter/seeder).

- When the connection to an ISOBUS job computer is interrupted during the start-up of a ISO-XML task. In most cases, the list of connections will be set correctly as soon as you reconnect the ISOBUS job computer.
- If this error message appears when starting the terminal: "List of connection is incomplete."
- When the following error message appears when starting a navigation in TRACK-Leader: "The device data is still loading." The settings in the list of connections can eliminate this problem.

7.4 Recording the working time of the workers

If you have assigned the task to a worker, their working time will be recorded as soon as the task is started. While performing the work, you can stop and start the working time recording and add new workers.

You can use this function when you want to document who has performed the work.

Procedure

This is how to stop the working time recording:

☑ A task is started.

1. Open the current task.
2. Tap "Worker".
   ⇨ A list with the assigned workers appears.
3. Tap the name of the worker who is finishing work.
   ⇨ The screen with the working time recording for the worker appears:
4. - Stop the working time recording.

⇨ The working time will no longer be recorded.

Procedure

This is how to add a new worker:

☑ A task is started.

1. Open the current task.
2. Tap "Worker".
   ⇨ A list with the assigned workers appears.
3. - Tap on the function icon to add a new worker.
   ⇨ A list of names of available workers appears.
4. Tap on a name.
5. Confirm.
   ⇨ The worker will be added to the task.

⇨ The working time will be recorded.

7.5 Selecting the task processing phase

Setting the task processing phase allows you to calculate the tasks more accurately.

The following phases exist:

- Driving time
- Preparation
- Working time

- Break
- Repair time
- Offloading time

Procedure

☑ A task is started.

1. Open the current task.
2. Tap "Working time". (This line will later be named after the selected phase.)
   ⇨ A screen appears where you can see the working course until now.
3. - Add a new phase.
   ⇨ A list of available phases appears.
4. Select what you are doing at this moment.
5. Confirm.
   ⇨ The new phase appears in the overview.
   ⇨ The current phase always appears at the very top.
   ⇨ For each phase, the sum of the times in this phase and the last starting time are shown.
   ⇨ When starting a new task, the "Working time" phase is always activated.

7.6 Counters on the ISOBUS job computer

The ISO 11783 standard defines several types of counters that can be transmitted by the ISOBUS job computers to the ISOBUS-TC. The texts of the counters are not the same for all manufacturers and job computers.

The determined values are generally transmitted in decimal units. ISOBUS-TC does not correct anything. This means, for example, that a working time of 0.33 hours corresponds to 20 minutes. Counting always takes place from the start to the end of a task.

Type of counter	Unit	Notes
Total applied quantity.	L, kg, piece	
Total yield	L, kg, piece	
Applied area	ha, m^2	
Driven distance in working position	km, m, mm	This is generally the applied distance.
Driven distance not in working position	km, m, mm	
Time in working position	Hours, Minutes, Seconds	
Time not in working position	Hours, Minutes, Seconds	

You can see the counters when you move the ISOBUS-TC application into an additional window of the terminal.

Procedure

To configure the counters:

☑ A task is started.

1. Tap "Current task".
2. Tap "Counters".
   ⇨ A list appears with the connected ISOBUS job computers that are involved in the task.
   ⇨ For each job computer that appears, you can select which counters should be displayed in the additional window. Because not all of the counters fit in the window, make a good selection. Although the counters that were not selected are not displayed in the additional window, they are still documented.

7.7 Documenting filling and emptying

With ISOBUS-TC you can document filling and emptying.

The data entered in this procedure will not be exchanged between the ISOBUS job computer and the application.

You can evaluate the documented values in the farmpilot portal.

Example 1 After weighing a tipper truck, the driver can enter that he has loaded 20 tonnes of maize.

Example 2 After spreading 5000 litres of manure with a non-ISO manure truck, the driver can enter the quantity spread as 'emptying'.

Procedure This is how to document filling and emptying when you are working without an ISOBUS job computer:

☑ A task is started.

1. Tap "Current task".
2. Tap "Filling/Emptying".
3. - Add a new process.
   ⇨ A list appears.
4. Tap on the entry "- - -"
5. - Confirm.
   ⇨ The "Filling/Emptying" screen appears.
6. Fill in the fields.
7. - Save the entry.
   ⇨ The following message appears: "Do you want to save your changes?"
8. Confirm.

8 Step 6: Stopping work

You can stop a task at any time. You must decide yourself whether this task has been fully processed or must be processed further.

If you stop the work, you must decide what should happen to the task. Depending on whether the task was fully processed or must be processed further, you have the following options:

- Stopping a task
- Pausing a task

8.1 Stopping a task

When you stop a task, farmpilot will consider this task to be fully completed.

Therefore, you should only stop tasks if they have been completed.

Procedure

☑ A task is started.

1. Tap "Current task".
2. - Stop the task.

⇨ The task will be marked red on the "Task" screen.

8.2 Pausing a task

You can pause a task if you need to interrupt your work, but have not yet completed the task.

A task will only be paused if you start another task.

9 Step 7: Finishing the documentation

If you have finished a task or set of tasks, you can export the results.

The following options are available to you:

- Transfer tasks to the FMIS using a USB memory device
- You can transfer the work results to the PC as a text file.
- You can print the results.

9.1 Transferring tasks using a USB memory device

Procedure

☑ You have completed all tasks.

☑ All tasks are marked red on the task list.

☑ A USB memory device is inserted into the terminal.

1. Open the start screen of the "ISOBUS-TC" application.
2. - Tap on "Logout".
3. Remove the USB memory device.
4. Connect the USB memory device to a PC.
5. You can now import and edit the taskdata.xml file using the FMIS.

9.2 Upload a set of tasks to the farmpilot portal

Procedure

☑ You have received the tasks through farmpilot.

☑ You have completed all tasks. All tasks are marked in red on the task list.

1. - Open the ISOBUS-TC application.
2. Tap "Upload".
   ⇨ The following message appears: "Start uploading task data?"
3. Confirm.
   ⇨ Data is being loaded.
   ⇨ The sent task data is no longer shown on the terminal.

⇨ You have uploaded a set of tasks to the portal.

9.3 Using text files

Each time you finish a task, a text file is created on the storage medium. You can open this file on your PC with any text editor.

From the top, the following information can appear in the record:

- Task designator
- Customer
- Farm
- Field
- Person in charge
- Start and stop times
- Task duration, of which:

  - Working time
  - Driving time
  - Preparation
  - Break
  - Repairs
  - Offloading time
- Involved worker
- Used implements
- Target rates
- Creation date, creation time

The information appearing in your documentation always depends on how precisely you have entered the data into the task and which information was transmitted by the ISOBUS job computer to the ISOBUS-TC app.

Procedure

To create the text file:

☑ You have activated the "Save finished tasks as a file?" parameter. [→ 12]

1. Stop a task.
2. On the start screen of the ISOBUS-TC application, tap "Logout".

⇨ The text file will be saved in the "Documents" folder on the USB memory device.

⇨ If you start and stop a task several times, several files will be created.

9.4 Printing the results

If an ISO printer sold by ME is connected to the terminal, you can print the results of any finished task as a record.

The record can show the same information as in a text file that is automatically created. See section: Using text files [→ 31]

Procedure

☑ The ISO printer is connected to the terminal and activated.

☑ You have finished the work.

1. Stop the task.
2. Open the task data.
3. - Start printing.

10 Troubleshooting

Farmpilot is not sending any data

The farmpilot dispatcher sent you new task data, but nothing is being received on the terminal.

- Cause: The "taskdata" folder is on the SD card. It has a higher priority than the farmpilot tasks.
  Remedial measure: Insert a USB memory device and tap "Logout". A message should then appear indicating that data from farmpilot is available.
- Cause: No GPRS connection.
  Remedial measure: Reconnect with farmpilot.

Error message: "Error: Device Description Upload not successful!"

- Cause: The job computer has a faulty device description
  Remedial measure: You cannot use ISOBUS-TC with this job computer. It will only be possible when the job computer software delivers the device description in a proper format.

Error message: File error: Wrong version of the task data! Work data is damaged. Copy the damaged data and resume work with new data?

- Cause: The taskdata.xml file is damaged or cannot be read for another reason.
  Remedial measure: The taskdata.xml file must be removed from the SD card. To do so, insert a USB memory device and tap "Logout". Then insert a USB memory device with functioning data.

11 Notes